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COMMENTS: Please see the following Amended Appeal Brief for filing in the patent application S/N 10/849,981. Thank you.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: ACH	)	Group Art Unit: 3654
Serial No.: 10/849,970	)	Examiner: T. Matthews
Filed: May 20, 2004	)	Attorney Docket: 16755
For: ELEVATOR SYSTEM	)	Confirmation No.: 8636
	)	Customer No.: 43935

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

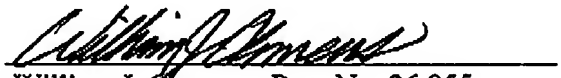
TRANSMITTAL OF AMENDED APPEAL BRIEF

Honorable Sir:

In response to the Notification of Non-Compliant Appeal Brief, transmitted herewith is the Amended Appeal Brief in this application, with respect to the Notice of Appeal filed on May 6, 2007. Pursuant to 37 CFR §41.20(b)(2), Applicant previously authorized charging the fee for filing the Appeal Brief to Deposit Account No. 50-3156.

Applicant thanks the Specialist, Mr. Tim Cole, for the opportunity to correct the format of the brief. Applicant believes the brief is now in compliance and requests consideration of same.

Respectfully submitted,



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AMENDED BRIEF ON APPEAL

(i) ***Real Party in Interest:***

The real party in interest is INVENTIO AG, the assignee of record.

(ii) ***Related Appeals and Interferences:***

An appeal has been filed and is currently pending in corresponding U.S. App. No. 10/849,981 filed on May 20, 2004 and entitled ELEVATOR SYSTEM. Both U.S. App. No. 10/849,981 and this application, U.S. App. No. 10/849,970, claim priority to EP 01811132.8 filed November 23, 2001, and ACH is a common inventor. The Examiner is the same in both applications.

(iii) ***Status of Claims:***

Claims 1 and 4-14 remain pending in the application and all of these claims are being appealed.

A utility patent application was filed on May 20, 2004 with Claims 1-14, wherein Claims 1 and 13 are independent claims, Claims 2-12 depend from Claim 1 and Claim 14 depends from Claim 13.

A first office action was received on January 11, 2006 in which the Examiner rejected Claims 1-14. Specifically, the Examiner rejected Claims 1-14 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claiming the subject matter which applicant regards as the invention.

Additionally, Claims 1, 2 and 5-8 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Heinz (US App. Pub. No.

2003/121729). However, in the support for the rejections, the Examiner referred to Claims 1-4 and 10-14, but Claims 3, 4, 10, 11, 13 and 14 were not listed as being rejected. Claims 1, 5 and 6 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935). Claim 9 was rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Heinz (US App. Pub. No. 2003/121729) in further view of Faletto (USPN 6,471,012).

Applicant filed a timely response on April 10, 2006, amending Claims 1, 4, 13 and 14 and canceling Claims 2 and 3. Claim 1 was amended to include the subject matter of canceled Claims 2 and 3. Claim 13 was amended to include the subject matter of canceled Claim 3. Dependent Claim 4 was amended to depend from amended Claim 1 and dependent Claim 14 was amended to overcome the §112 rejection. Applicant reminded the Examiner that the Heinz (US App. Pub. No. 2003/121729) application was filed on January 2, 2002, subsequent to the November 23, 2001 filing date of EP Pat. App. No. 01811132.8 from which Applicant claims priority through PCT application PCT/CH02/00633. Thus the Heinz application is NOT prior art.

On June 28, 2006, a second office action was received wherein the Examiner rejected Claims 1 and 4-14 in a non-final office action. The Examiner acknowledged Applicant's claim for priority. Additionally, the Examiner rejected Claims 1, 4-8, 10, 11, 13 and 14 under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935). Claim 9 was rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-8, 10, 11, 13 and 14 as previously stated and in further view of Faletto (USPN 6,471,012). Claim 12 was rejected 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-8, 10, 11, 13 and 14 as previously stated and in further view of Saito (USPN 5,025,893).

On September 28, 2006, Applicant filed a timely response in which Claims 1 and 4-14 were resubmitted without further amendment.

On December 7, 2006, a third office action was received wherein the Examiner finally rejected Claims 1 and 4-14. Claims 1, 4-8, 10, 11, 13 and 14 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935). Claim 9 was rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-8, 10, 11, 13 and 14 as previously stated and in further view of Faletto (USPN 6,471,012). Claim 12 was rejected 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Danhauer (US App. Pub. No. 2002/0098935) as applied to Claims 1, 4-8, 10, 11, 13 and 14 as previously stated and in further view of Saito (USPN 5,025,893).

In response to the Final Rejection, Applicant filed an amendment on March 7, 2007 in which Claims 1 and 4-14 were resubmitted without further amendment.

On April 3, 2007, the Examiner responded with an Advisory Action Before the Filing of an Appeal Brief stating that Applicant's request for reconsideration has been considered but does NOT place the application in condition for allowance because in view of the prior art all of the teachings of the present application are disclosed or would have been rendered obvious.

On May 6, 2007, Applicant filed a Notice of Appeal together with a petition for an extension of time.

Thus the status of each of the claims is as follows:

1. Claims 1 and 4-14 rejected.
2. Claims 2 and 3 canceled.

The claims on appeal are Claims 1 and 4-14. A copy of the claims on file is submitted in the attached Appendix.

(iv) ***Status of amendments:***

Although a response with arguments was filed subsequent to the final rejection, the claims were not amended beyond the initial amended set of claims filed in response to the first office action.

(v) ***Summary of claimed subject matter:***

The invention sought to be patented is directed to creating an elevator system and replacing the prior art flat-belt-like support means with flat traction surfaces by a wedge-ribbed belt. (Specification Page 2, lines 24-25). The novel system as set forth in independent Claim 1 comprises: a drive motor **2** mounted at a head of an elevator shaft **1** (page 5, lines 29-31) and having a drive pulley **16** (page 6, line 9); an elevator car **3** movable in the elevator shaft **1** (**Figure 1**, page 5, lines 29-30); a counterweight **8** (page 6, lines 3-7) movable in the elevator shaft **1** and arranged laterally of the elevator car **3** (**Figure 1**, page 6, lines 10-12); and a belt support means **12** (page 6, lines 2, 5, 26-28) supporting the elevator car **3** by underlooping and engaging the drive pulley **16** (Figure 1, page 6, lines 28-32, page 7, lines 1-3, and see **Figure 2** and lines 21-22), the support means **12** being a wedge-ribbed belt **12** (**Figures 3 and 4**, page 8, lines 1-2) having a running surface facing the drive pulley **16** (page 6, lines 26-27) and a plurality of ribs **23** and grooves **24** formed in the running surface and extending in parallel in a longitudinal direction of the support means **12**, the ribs **23** and grooves **24** being one of triangular-shaped and trapezium-shaped in cross section (**Figures 3 and 4**, page 8, lines 12-23) and the ribs **23** and grooves **24** being formed with lateral flanks at an angle **b** in a range of 80° to 100° (page 8, lines 19-20).

The novel system as set forth in independent Claim 13 comprises: an elevator car support for use in an elevator system (**Figures 1 and 2**) having a drive motor **2** mounted at a head of an elevator shaft **1** (page 5, lines 29-30) and having a drive pulley **16** (page 6, line 10) for engaging the support, the support comprising a wedge-ribbed belt **12** (**Figures 3 and 4**, page 8, lines 1-2) adapted to support the elevator car **3** by underlooping and engaging the drive pulley **16** (**Figure 2**, page 6, lines 26-32, page 7, lines 1-3), the belt **12** having a running surface adapted to face the drive pulley **16** (page 6, lines 26-32, page 7, lines 1-3) and a plurality of ribs **23** and grooves **24** (**Figures 3 and 4**, page 8, lines 12-23) formed in the running surface and extending in parallel in a longitudinal direction of the belt **12**, the ribs **23** and grooves **24** being formed with lateral flanks at an angle **b** in a range of 80° to 100° (page 8, lines 19-20).

The novel wedge-ribbed belt has in the region of its traction surface several ribs and grooves which extend parallel in a belt longitudinal direction and the cross-sections

of which have lateral flanks running towards one another in a wedge-shaped manner. When running around the drive pulley, at the periphery of which there are similarly present ribs and grooves complementary to those of the wedge-ribbed belt, the wedge-shaped ribs of the wedge-ribbed belt are pressed into the wedge-shaped grooves of the drive pulley. In that case, due to the wedge shape the perpendicular forces arising between drive pulley and wedge-ribbed belt are increased so that an improvement in the traction capability between drive pulley and belt results.

In addition, the interengagement of the ribs and grooves of the wedge-ribbed belt in those of the pulleys and rollers ensures excellent, distributed lateral guidance of the support means on several rib and groove flanks.

Fig. 1 shows a section, which is parallel to an elevator car front, through an elevator system according to the present invention. An elevator shaft, in which a drive motor **2** moves an elevator car **3** upwardly and downwardly by way of a support means in the form of a wedge-ribbed belt **12**, is characterized by the reference numeral **1**. The elevator car **3** is guided by means of car guide shoes **4** at car guide rails **5** fixed in the elevator shaft **1**. Mounted below a car floor **6** on both sides are car support rollers **7** by way of which the supporting and acceleration forces of the wedge-ribbed belts **12** are transmitted to the elevator car **3**. A counterweight **8**, which is guided by means of counterweight guide shoes **9** at two counterweight guide rails **10** and is suspended by means of a counterweight support roller **11** at the same wedge-ribbed belt **12** as the elevator car **3**, is arranged on the left-hand side of the elevator car **3**. The drive motor **2** is mounted above the shaft space taken up by the elevator car **3** and comprises a driven shaft **14** acting on a drive pulley shaft **15**, wherein the drive pulley shaft is oriented parallel to the wall of the elevator car **3** at the counterweight side and carries at least one drive pulley **16**. The drive motor **2** is fastened on a motor carrier **13** which is supported on the car guide rails **5** at the counterweight side as well as on the two counterweight guide rails **10** and is fixedly connected with these.

In addition, a controllable brake unit **17**, which is here represented as invisible and which is arranged in the region of the end of the drive pulley shaft remote from the drive motor **2**, is mounted on the motor carrier **13** supporting the drive motor **2** and can brake the drive pulley shaft **15** and thus the drive pulley **16**. The brake unit **17** serves at

the same time as a mounting for the stated end of the drive pulley shaft **15**. The advantage of this arrangement resides in the fact that in the case of a motor failure the possibility of braking the drive pulley is maintained.

The plane of the drive pulley **16** is arranged at right angles to the car wall at the counterweight side and lies approximately in the middle of the car depth. The vertical projection of the drive pulley **16** lies outside the vertical projection of the elevator car **3**, whereas a part of the vertical projection of the drive motor **2** is superimposed on that of the elevator car **3**. The drive pulley 16 preferably has a diameter in a range of 70 to 100 millimeters.

The wedge-ribbed belt **12** serving as the support means is fastened at one of its ends below the drive pulley **16**, and in the region of the vertical projection thereof, to the motor carrier **13**. From this first support means fixing point **18** it extends downwardly to the side, which faces the elevator car **3**, of the periphery of the counterweight support roller **11**, loops around the counterweight support roller, extends from this to the side, which is remote from the elevator car, of the periphery of the drive pulley **16**, loops around the drive pulley and runs downwardly along the car wall at the counterweight side, loops by 90° on the two sides of the elevator car around the respective car support rollers **7** mounted below the car and runs upwardly along a car wall remote from the counterweight to a second support means fixing point **19**.

The described support means arrangement produces in each instance vertical movements of elevator car **3** and counterweight **8** in opposite sense, wherein the speed thereof corresponds with half the circumferential speed of the drive pulley **16**. The special arrangement of the first support means fixing point **18** enables a smallest possible spacing between the car wall at the counterweight side and the shaft wall when no twisting of the support means is permitted, i.e. when the planes of the drive pulley **16** and the counterweight support roller **11** are to be aligned with the planes of the car support rollers **7**, which is virtually invariably the case with flat-belt-like support means.

Fig. 2 shows a special alternate embodiment of the lower looping around the bottom **6** of the elevator car **3** by the wedge-ribbed belt **12**. In addition to the car support rollers **7** mentioned in the foregoing there is fastened, between these, to the car floor **6** a guide roller **20** which is similarly provided with ribs and grooves.

Such a guide roller takes over lateral guidance of the wedge-ribbed belt **12** having ribs and grooves only on a running surface. Such a wedge-ribbed belt **12** is laterally guided by the car support rollers **7** without the help of the ribs and grooves, since these are directed radially outwardly during running around these car support rollers 7. Such guidance is not, however, necessary in every case, for example not when the car support rollers are equipped with boundary discs or are of sufficient length.

Figs. 3 and 4 show possible embodiments **12.1** and **12.2** of the wedge-ribbed belt **12**, which are usable for the elevator system according to the present invention, with ribs and grooves oriented in longitudinal direction of the belt.

In the case of the embodiment **12.1** according to Fig. 3, ribs **23.1** and grooves **24.1** have a triangular cross-section. In the case of the embodiment 12.2 according to Fig. 4, ribs **23.2** and grooves **24.2** have a trapezium-shaped cross-section. An angle "**b**" present between the flanks of a rib or a groove influences the operating characteristics of a wedge-ribbed belt, particularly the running quietness thereof and the traction capability thereof. Tests have shown that it is applicable within certain limits that the larger the angle "**b**", the better the running quietness and the worse the traction capability. Advantageous properties with respect to running quietness and traction capability have been achieved simultaneously if the angle "**b**" lies between 80° and 100°. An optimum compromise between the opposing requirements is achieved by wedge-ribbed belts in which the angle "**b**" lies at approximately 90°.

A further possibility of refinement of the wedge-ribbed belt **12.2** is recognizable from Fig. 4. The wedge-ribbed belt **12.2** has, apart from the wedge-shaped ribs **23.2** and grooves **24.2**, also transverse grooves **26**. These transverse grooves **26** improve the bending flexibility of the wedge-ribbed element **12.2**, so that this can co-operate with drive pulleys, support rollers and deflecting rollers which have extremely small diameters.

(vi) ***Grounds of Rejection to be Reviewed on Appeal:***

The final rejection of Claims 1, 4-8, 10, 11, 13 and 14 under 35 U.S.C. 103(a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (US-5891561) in further view of Danhauer (US 2002/0098935).

The final rejection of Claim 9 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Danhauer, and in further view of Faletto (6471012).

The final rejection of Claim 12 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Danhauer, and in further view of Saito (US-5025893).

(vii) ***Argument:***

The final rejection of Claims 1, 4-8, 10, 11, 13 and 14 under 35 U.S.C. 103(a):

In the final office action dated December 7, 2006, the Examiner finally rejected Claims 1 and 4-14. Claims 1, 4-8, 10, 11, 13 and 14 were rejected under 35 USC §103 (a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (USPN 5,891,561) in further view of Danhauer (US App. Pub. No. 2002/0098935).

Referring to Claims 1 and 4-6, the Examiner states that Baranda discloses: an "Elevator System Having Drive Motor Located Between Elevator Car and Hoistway Sidewall" as claimed (See Figs. 1-8 and respective portions of the specification); a drive motor (42) mounted at a head of an elevator shaft and having a drive pulley; an elevator car (16) movable in the elevator shaft; a counterweight (48) movable in the elevator shaft and arranged laterally of the elevator car (See Pg. 2 - Pg. 31. 17 & Fig. 2); and a flat-belt-like support means supporting the elevator car by under looping and engaging the drive pulley. The Examiner comments that Baranda does not disclose the support means being a wedge-ribbed belt having a running surface facing the drive pulley and a plurality of ribs and grooves formed with an angle in the range of 80 to 100 degrees in the running surface and extending in parallel in a longitudinal direction of the support means.

According to the Examiner, Kinoshita discloses a "Power Transmission Belt With Load Carrying Cord" (See Figs. 1- 3 and respective portions of the specification) and a wedge-ribbed belt (10) with ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section (See at least Col. 31. 12-30 and at least Fig. 1). According to the Examiner, Danhauer discloses a belt (10) with a plurality of ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction on the support means (See Sect. 0017 & Figs. 1-2), and Danhauer discloses that the belt (10) is provided with a plurality of transverse grooves (34) (See Sect. 0025) and that the grooves are provided at an inclined angle. Additionally, the Examiner notes that

the belt (10) has at least two wedge-ribbed belt strands arranged in parallel (See Figs. 1-2), and it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Baranda to include the teachings of Danhauer and provide a wedge-ribbed belt with a plurality of ribs and grooves formed in the running surface as well as transverse grooves and ribbed strands formed at an inclined angle as taught by Kinoshita and Danhauer so that the belt could provide better traction, increased flexibility, running quietness, and a higher load capacity.

Referring to Claim 7, the Examiner comments that Baranda does not disclose that the drive pulley has an external diameter in a range of 70 to 100 millimeters, but it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda to include drive pulleys that were in the range of 70 to 100 millimeters so that greater torque and lifting capacity could be achieved.

Referring to Claim 8, the Examiner states that Baranda discloses that the car guide rail (60, 64) is mounted on two opposite sides of the elevator car and two counterweight guide rails (62, 66) mounted on a counterweight side of the elevator car and the drive motor with the drive pulley being mounted on a motor carrier (36) attached to one of the car guide rails and to the two counterweight guide rails (See Pg. 4 - Pg 5 l. 23 & Figs. 1-2).

Referring to Claim 10, the Examiner states that Baranda discloses an elevator wherein said drive motor and said drive pulley are mounted above a space in the elevator shaft taken up by said elevator car, a plane of said drive pulley being arranged vertically and at right angles to a car wall at a counterweight side of said elevator car and approximately in a middle of a car depth of said elevator car, a vertical projection of said drive pulley onto said counterweight side of said elevator car being outside a vertical projection of said counterweight side, and a part of a vertical projection of said drive motor being superimposed on said vertical projection of said counterweight side of said elevator car (See Figs. 1-2).

Referring to Claims 11, 13 and 14, the Examiner states that Baranda discloses an elevator system wherein the belt extends from a support means fixing point below said drive pulley and in a region of a vertical projection of said drive pulley, downwardly to a side, which faces said elevator car of a periphery of a counterweight support roller, loops

around said counterweight support roller, extends to a side remote from said elevator car of a periphery of said drive pulley, loops around said drive pulley and runs downwardly along a car wall at a counterweight side of said elevator car, loops by 90 around a respective car support roller mounted below said elevator car on each of two sides of said elevator car and runs along a car wall remote from said counterweight upwardly to a second support means fixing point in the elevator shaft. The Examiner states that Baranda further discloses an elevator system having a drive motor mounted at the head of the elevator shaft and having a drive pulley for engaging the support, comprising a belt adapted to support the elevator car by underlooping and engaging the drive pulley. The Examiner comments that Baranda does not disclose that the belt is wedge-ribbed belt that has a running surface adapted to face the drive pulley and a plurality of substantially triangular-shaped and trapezium shaped ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction of the belt, but Danhauer discloses the belt is a wedge-ribbed belt that has a running surface adapted to face the drive pulley and a plurality of ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction of the belt (See at least Fig. 1), Danhauer discloses that the belt (10) is provided with a plurality of transverse grooves (34) (See Sect. 0025) and that the grooves are provided at an inclined angle, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus to include a belt as taught by Danhauer and Kinoshita so that greater traction and running quietness could be achieved as well as a higher load capacity.

The final rejection of Claim 9 under 35 U.S.C. 103(a):

The Examiner rejected Claim 9 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Danhauer, and in further view of Faletto (6471012). The Examiner comments that Baranda does not disclose a brake unit mounted on the motor carrier for acting upon the drive pulley. The Examiner states that Faletto discloses: a "Pulley System For A Traction Sheave Elevator" as claimed (See Figs. 1-2 and respective portions of the specification); a brake acting on a drive pulley to prevent rope movement; and that the brake could be positioned to act on the rope, on a pulley mounted on the elevator car, or on an auxiliary pulley (See Col. 51.9-14). The Examiner states that it

should be noted that it is generally known in the field of art to provide a brake to act on the drive pulley to prevent movement, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda to include a brake unit to act on the drive pulley to prevent movement in order to slow and stabilize the elevator car.

The final rejection of Claim 12 under 35 U.S.C. 103(a):

The Examiner rejected Claim 12 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Danhauer, and in further view of Saito (US-5025893). The Examiner comments that Baranda does not disclose that the guide roller mounted at the bottom of the elevator car and engaging the wedge-ribbed belt, in which the guide roller has a plurality of ribs and grooves engaging the ribs and grooves of the wedge-ribbed belt for guidance of the wedge-ribbed belt. The Examiner states that Saito discloses: a "Vibration Suppressing Device For Elevator" (See Figs. 1- 5 and respective portions of the specification); guide rollers (11,12) having a plurality of ribs and grooves for engaging the ribs and grooves of the rope for guidance of the rope (See at least Col. 2 1. 45 - 66, Col. 3 1. 25 - 30 & at least Figs. 4-5), and it would have been obvious to a person of ordinary skill in the art at the time of the invention in view of Saito to modify the apparatus of Baranda to include guide rollers that had a plurality of ribs and grooves that engaged the ribs and grooves of the belt so that a elevator could receive greater traction and a higher load capacity.

Claim 1:

The Examiner finally rejects independent Claims 1 and 13 as being unpatentable over Baranda in view of Kinoshita and in further view of Danhauer. The Examiner stated that Danhauer discloses a belt having "at least two wedge-ribbed belt strands arranged in parallel" and "provided with a plurality of transverse grooves (34) (See Sect. 0025) ... at an inclined angle between 20° and 85°."

Initially, Claim 1 defines an elevator system including "a belt support means supporting said elevator car ..., said support means being a wedge-ribbed belt having a running surface ... and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said support means, said ribs and

grooves being one of triangular-shaped and trapezium-shaped in cross section and said ribs and grooves being formed with lateral flanks at an angle in a range of 80° to 100°" (emphasis added).

Claim 13:

Claim 13 defines an elevator car support for use in an elevator system comprising a wedge-ribbed belt having the identical features as recited in Claim 1.

Danhauer shows a wedge-ribbed belt having a plurality of ribs and grooves formed in its running surface and extending in parallel in a longitudinal direction of the belt, the ribs and grooves being trapezium-shaped in cross section. However, in contrast to Applicant's claimed invention, the Danhauer belt is provided with a plurality of transversely extending grooves in its compression section (the compression section is the section of the belt with the longitudinally extending ribs and grooves), the transverse grooves being inclined at an angle of 20° to 85° relative to the direction of the longitudinal grooves. (See par. [0025] of Danhauer) Thus, the Danhauer angle range of 20° to 85° refers to the **direction of the transversely extending grooves** and has nothing whatsoever to do with the **angle of formation of the flanks of the longitudinally extending ribs and grooves** as recited in Applicant's claims.

Claims 1 and 13:

The angle of 80° to 100° as specified in Applicant's Claims 1 and 13 is related to the angle between the flanks (see angle "b" in Figs. 3 and 4) of the triangular-shaped or trapezium-shaped cross sections of the ribs and grooves extending parallel to the longitudinal direction of the belt. The angle of 20° to 85° specified in the Danhauer document is related to the angle between the transverse grooves **34** extending across the compression section of the belt and the longitudinal grooves **20** extending in the direction of the belt.

It is obvious that the angle range as specified in the Danhauer document defines a completely different geometric feature of a wedge-ribbed belt than the angle range as specified in Applicant's Claims 1 and 13 (Applicant's belt does not even have any grooves extending transversely to the longitudinal direction of the belt).

The characteristic feature of Applicant's Claims 1 and 13-that the (triangular-shaped and trapezium-shaped) ribs and grooves are formed with lateral flanks at an angle

in a range of 80° to 100° is not shown in or suggested by Danhauer. The invention according to the pending claims is not shown in or suggested by any combination of the references cited by the Examiner in his rejections of the claims.

In response to Applicant's arguments in the previous Amendment, the Examiner stated that Applicant's focus on "grooves being formed with lateral flanks at an angle in a range between 80° to 100°" is unpersuasive because Danhauer teaches that it is known in the art to provide grooves with lateral flanks formed at an inclined angle and it would have been have been obvious to one having ordinary skill in the art at the time of the invention to provide the grooves formed with lateral flanks at an angle in a range of 80° to 100°, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art to which it would have been obvious to do so in order to increase traction capability, running quietness, and load capacity.

This is not a case of "adjustability". Applicant notes that the Examiner has failed to cite any art showing a wedge-ribbed belt having lateral flanks arranged with an angle in the range recited in Applicant's claims. There is a reason for this failure to locate such prior art. Generally known and available wedge-ribbed belts (also called poly-v belts) have ribs and grooves with lateral flanks arranged at a wedge angle in a range of 35° to 40°. See the attached two data sheets. (Noted in Evidence Appendix). Applicant is unable to find any documents showing wedge-ribbed belts having wider wedge angles between the flanks of their ribs and grooves, and has not found single v-belts having wedge angles of more than 60°.

The wedge-ribbed belts according to the claimed invention, having wedge angles between the flanks of their ribs and grooves in a range of 80° to 100°, are the result of extensive research and test work in order to find an optimum belt for suspending and driving elevator cars. Findings resulting from said research and test work include:

1. A wedge-ribbed elevator belt made from elastomeric material and having ribs with an edge angle smaller than 80° to 100° may cause the following problems:

- the tensioned belt running about a belt sheave generates a high noise level due to the fact that the ribs are strongly being jammed between the flanks of the corresponding grooves of the sheave.

- due to said jamming effect, there is the risk that the drive sheave of the elevator further lifts the elevator car (respectively the counterweight) if, due to a control failure, the counterweight (respectively the elevator car) strikes its lower limit stop.

2. If the wedge-ribbed elevator belt has ribs with the angle being bigger than 80° to 100°:

- the lateral guiding of the belt on its sheaves isn't guaranteed; i.e. there is a high risk of derailment of the belt from the sheaves.
- the required traction (friction) between the drive sheave and the wedge-ribbed belt may not be reached.

As stated in Applicant's specification on Page 8, at Lines 12-22:

> In the case of the embodiment **12.1** according to Fig. 3, ribs **23.1** and grooves **24.1** have a triangular cross-section. In the case of the embodiment **12.2** according to Fig. 4, ribs **23.2** and grooves **24.2** have a trapezium-shaped cross-section. An angle "**b**" present between the flanks of a rib or a groove influences the operating characteristics of a wedge-ribbed belt, particularly the running quietness thereof and the traction capability thereof. Tests have shown that it is applicable within certain limits that the larger the angle "**b**", the better the running quietness and the worse the traction capability. Advantageous properties with respect to running quietness and traction capability have been achieved simultaneously if the angle "**b**" lies between 80° and 100°. An optimum compromise between the opposing requirements is achieved by wedge-ribbed belts in which the angle "**b**" lies at approximately 90°.

Thus, one of ordinary skill in the art would not increase the angle from the typical range of 35° to 40° since it is known that there would be a loss of traction capability. For these reasons, Applicant is firmly convinced that the cited prior art would not lead a person having ordinary skill in the art to provide a wedge-ribbed elevator belt having ribs and grooves formed with lateral flanks at an angle in a range of 80° to 100°.

Claims 4-12 and 14:

Applicant respectfully submits that independent Claims 1 and 13 are novel over the prior art of record. Claims 4-12 and 14 depend from these claims and are, therefore, also allowable.

For the foregoing reasons, Applicant respectfully submits that the claims on appeal each define subject matter which is not rendered obvious to one of ordinary skill in the art at the time the invention was made. Accordingly, all of the claims on appeal are believed to be entitled to allowance, and a favorable decision is courteously solicited.

Respectfully submitted,

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(viii) *Claims Appendix:*

The claims on Appeal read as follows:

1. (Previously Presented) An elevator system comprising:

a drive motor mounted at a head of an elevator shaft and having a drive pulley;

an elevator car movable in the elevator shaft;

a counterweight movable in the elevator shaft and arranged laterally of said elevator car; and

a belt support means supporting said elevator car by underlooping and engaging said drive pulley, said support means being a wedge-ribbed belt having a running surface facing said drive pulley and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said support means, said ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section and said ribs and grooves being formed with lateral flanks at an angle in a range of 80° to 100°.

Claims 2-3 (Cancelled)

4. (Previously Presented) The elevator system according to claim 1 wherein said angle is 90°.

5. (Original) The elevator system according to claim 1 wherein said wedge-ribbed belt has a plurality of transverse grooves formed in said running surface.

6. (Original) The elevator system according to claim 1 wherein said support means includes at least two wedge-ribbed belt strands arranged in parallel.

7. (Original) The elevator system according to claim 1 wherein said drive pulley has an external diameter in a range of 70 millimeters to 100 millimeters.

8. (Original) The elevator system according to claim 1 including a respective car guide rail is mounted on two opposite sides of said elevator car and two counterweight guide rails mounted on a counterweight side of said elevator car, and said drive motor together with said drive pulley being mounted on a motor carrier attached to one of said car guide rails and said two counterweight guide rails.

9. (Original) The elevator system according to claim 8 including a brake unit mounted on said motor carrier for acting upon said drive pulley.

10. (Original) The elevator system according to claim 1 wherein said drive motor and said drive pulley are mounted above a space in the elevator shaft taken up by said elevator car, a plane of said drive pulley being arranged vertically and at right angles to a car wall at a counterweight side of said elevator car and approximately in a middle of a car depth of said elevator car, a vertical projection of said drive pulley onto said counterweight side of said elevator car being outside a vertical projection of said counterweight side, and a part of a vertical projection of said drive motor being superimposed on said vertical projection of said counterweight side of said elevator car.

11. (Original) The elevator system according to claim 1 wherein said wedge-ribbed belt extends from a support means fixing point below said drive pulley and in a region of a vertical projection of said drive pulley, downwardly to a side, which faces said elevator car of a periphery of a counterweight support roller, loops around said counterweight support roller, extends to a side remote from said elevator car of a periphery of said drive pulley, loops around said drive pulley and runs downwardly along a car wall at a counterweight side of said elevator car, loops by 90° around a respective car support roller mounted below said elevator car on each of two sides of said elevator car and runs along a car wall remote from said counterweight upwardly to a second support means fixing point in the elevator shaft.

12. (Original) The elevator system according to claim 1 including a guide roller mounted at a bottom of said elevator car and engaging said wedge-ribbed belt, said guide roller having a plurality of ribs and grooves engaging said ribs and grooves of said wedge-ribbed belt for guidance of said wedge-ribbed belt.

13. (Previously Presented) An elevator car support for use in an elevator system having a drive motor mounted at a head of an elevator shaft and having a drive pulley for engaging the support, the support comprising: a wedge-ribbed belt adapted to support the elevator car by underlooping and engaging the drive pulley, said belt having a running surface adapted to face the drive pulley and a plurality of ribs and grooves formed in said running surface and extending in parallel in a longitudinal direction of said belt, said ribs and grooves being formed with lateral flanks at an angle in a range of 80° to 100°.

14. (Previously Presented) The elevator car support according to claim 13 wherein said ribs and grooves are one of triangular-shaped and trapezium-shaped in cross section.

(ix) ***Evidence Appendix:***

1. Data Sheet "CANDO- YOUR SINGLE SOURCE SUPPLIER OF BELTS & HOSES" – presented by Applicant in response to the final office action, Applicant's amendment dated March 7, 2007.

2. Data Sheet "ROLOFF/MATEK 16.AUFLAGE" - presented by Applicant in response to the final office action, Applicant's amendment dated March 7, 2007.

(x) ***Related Proceedings Appendix:***

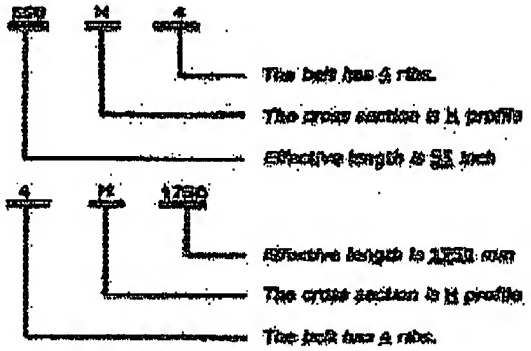
None. A decision in the related proceeding has not been rendered.

CANDO — Power Transmission Belts & Hoses

Cross section, profile and measurement of Poly-v belt

profile	pitch: P	height: h	height of belt: H	angle of rib:
H	1.6	1.1	3.0 ± 0.15	40° ± 2°
J	2.34	1.8	3.9 ± 0.25	40° ± 2°
K	3.56	2.4	5.5 ± 0.30	40° ± 2°
L	4.7	4.6	9.0 ± 0.40	40° ± 2°
M	9.4	9.4	16.0 ± 0.60	40° ± 2°

EXAMPLE ILLUSTRATIONS



Profile H series

Metric No.	Part No.	Metric No.	Part No.	Metric No.	Part No.
H 519	204 H	H 979	385 H	H 1549	610 H
H 536	211 H	H 990	390 H	H 1552	611 H
H 556	219 H	H 999	393 H	H 1565	616 H
H 581	229 H	H 1013	400 H	H 1596	628 H
H 600	236 H	H 1043	411 H	H 1627	641 H
H 614	242 H	H 1065	419 H	H 1635	644 H
H 622	245 H	H 1081	426 H	H 1659	653 H
H 638	251 H	H 1083	427 H	H 1678	661 H
H 644	254 H	H 1090	429 H	H 1744	687 H
H 657	259 H	H 1093	430 H	H 1790	689 H
H 668	263 H	H 1106	435 H	H 1808	711 H
H 679	267 H	H 1137	448 H	H 1841	725 H
H 691	272 H	H 1150	453 H	H 1863	733 H

Roloff / Matek 16 Auflage

TB 16-14 Keilrippenwellen und Keilrippenscheiben nach DIN 7867
(Tabellenwerte in Anlehnung an DIN 7867 und Werksangaben)

	Profilbezeichnung		PH	PJ	PK	PL	PM
Keilrippenriemen nach DIN 7867	Rippenteilung	t	1,60 ± 0,2	2,34 ± 0,2	3,56 ± 0,2	4,70 ± 0,2	9,40 ± 0,2
	Riemenhöhe	h max[1]	3	4	6	10	17
	Anzahl der Rippen	z[2]	2…31	2…50	2…70	2…60	2…45
	Riemenbreite	b	$b = z \cdot t$				
	Rippengrundtiefe	h_1 max	0,15	0,20	0,25	0,40	0,75
	Rippenkopfradius	r_a min	0,30	0,40	0,50	0,40	0,75
	Standard-Richtlänge L_d [3]	min	559	330	559	954	2286
		max	2134	3429	3492	6096	15748
	zul. Riemengeschwindigkeit	v max[2]	60 m/s	50 m/s	50 m/s	40 m/s	30 m/s
Keilrippenscheiben nach DIN 7867	Profil-Kennzeichen		H	J	K	L	M
	Rillenabstand	e	1,60 ± 0,03	2,34 ± 0,03	3,56 ± 0,05	4,70 ± 0,08	9,40 ± 0,08
	Gesamtabstand	a	$a = (\text{Rippenanzahl } z - 1) \cdot e$. Toleranz für a: ±0,30				
	Richtdrehmoment	d_{Welle}	12	20	45	75	160
		Stahlsorte	nach DIN 336 Werkzeugstähle 2210 (s. TB 1-16)				
	Innenradius	$r_{i\,min}$	0,30	0,40	0,50	0,40	0,75
	Außenradius	$r_{a\,max}$	0,15	0,20	0,25	0,40	0,75
	Profiltiefe	$h_{ef\,min}$[2]	1,55	2,05	3,45	4,92	10,03
	Randabstand	f_{min}	1,3	1,8	2,5	3,3	6,4
	Wirkdurchmesser	d_w	$d_w = d_a + 2h_a$				
	Bezugsfolie	h_b	0,8	1,25	1,6	3,5	5,0

[1] Maß nach Wahl des Herstellers
[2] Hersteller-Angaben vorzugsweise nach DIN 323 R'40

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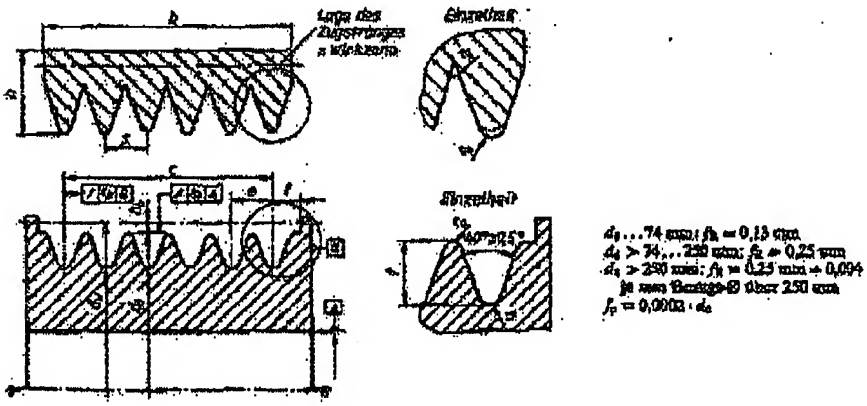

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